

Gasoline: A Blessing and A Safety Curse

Every worksite has some amount of flammable and combustible liquids on site for day to day use. A flammable liquid is much more volatile, meaning their vapors or fumes can ignite at temperatures below 100°F and some much lower than 32°. Some common worksite flammable liquids include gasoline, alcohols, lacquer thinners and some paint thinners. This means that at normal room temperatures, flammable liquids can give off enough vapors to form burnable mixtures with air.

On the other hand, a combustible liquid must reach temperatures higher than 100°F to release enough vapors or fumes to ignite. Combustible liquids common at a jobsite include fuel oil, kerosene and linseed oil. Both classes of liquids pose a very serious fire hazard.

Gasoline is probably the best known and most widely used of the flammable or combustible liquids. Many on a worksite have used gasoline to clean off their hands or a tool or piece of equipment or spilled a bit or finished a smoke while filling a vehicle or container. These events “happen all the time”, it must be remembered that these behaviors are extremely dangerous. To help prove this point, here are some facts you need to know about gasoline:

- Gasoline itself doesn't burn; it's the vapors from the gas that burn. Gasoline is very volatile changing easily from a liquid to a vapor at low temperatures, as low as 45°F below zero!
- Gasoline vapors are denser than air, meaning these vapors will sink and collect in the lowest point; this usually at the floor. This can be prevented or at least minimized with effective air circulation which helps to get rid of the vapors.
- An open flame is not necessary to ignite gas vapors, all that's needed is one spark and any gasoline vapors in the area will catch fire.
- Gasoline can be extremely irritating to the skin, in many cases causing a painful rash. This makes using gas as a cleaner a foolish idea. Always wash any skin that has come in contact with gasoline with water right away. Any clothing that comes in contact with gasoline need to be changed immediately. By wearing clothes that are soaked with gasoline (even a small amount), you run the risk of becoming a human torch.

Refueling is a necessary part of every day at every worksite. This makes it vital that the operations be conducted in as safe a manner as possible. Some things to remember when refueling, whether on the job or at home:

- Keep your mind on the task at hand. If you're distracted while pouring gasoline, you run the risk of over-filling and spilling gasoline.
- Never smoke during refueling! Remember it's the vapors, not the liquid that ignites. This means a lit cigarette doesn't have to be near the gasoline for it to catch fire.
- Keep either a CO₂ (carbon dioxide) or an ABC Dry Chemical extinguisher within 25 feet of any refueling operation. Having one closer would be ideal.

- Never refuel near work being done with an open flame or near a sparking situation. A fire or explosion can result from the fumes coming in contact with an ignition source.
- Always be certain that both the fuel dispensing tank and the equipment being refueled are BOTH grounded. This will prevent a sparking issues
- Don't overfill the tank; fill it only about 95%, especially on hot days. At high temperatures gasoline will expand and eventually overflow.
- If it is possible for a vehicle to accidentally roll during refueling, chock the wheels
- Before refueling, always shut the engine off and allow it to cool if necessary.
- When refueling is complete be sure gasoline is drained from the hose and check for any spills. If a spill exists, be sure to clean it up immediately.

Since gasoline is prone to catch fire or explode, it should always be stored in a Type I or II safety storage containers. These containers control the gas vapors and provide an easy way to carry, dispense and store up to 5 gallons of gasoline. These containers must be able to withstand moderate mechanical shocks as well as include vapor control, emergency venting, leak tight self-closing covers and flame arrestor protected pour spouts.

Most containers are made from rugged materials like stainless steel or polyethylene and should have an independent testing laboratory listing or approval mark. The main difference between Type I and II containers is the size of the pour spout. Type I is built with a wider spout for pouring gas into tanks or other largemouth vessels while Type II's smaller spout allows for more accurate pouring.

Having our employees follow these safety suggestions during a necessary as well as dangerous process like refueling can help to send them home safely.

For additional help with safety and OSHA compliance, take advantage of the resources available through NCMA. These resources include the NCMA Block Plant Safety Software. The software is available from NCMA at (703) 713-1900 at a cost of \$150 for up to 3 plants/year (nonmember \$450).